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ABSTRACT

Coast Community College District in Orange County, California is a leader among community colleges in the instructional use computers. The district's hardware consists of an IBM system 370 model 155 computer, over 80 typewriter terminals, 12 cathode ray tubes (CRT), and several microfiche image projection devices. Better than 700 computer-assisted instructional (CAI) units are currently in use in a wide range of subjects from accounting to zoology, including such non-traditional areas as photography and electronic trouble-shooting; furthermore, graphic display devices supplement instruction by providing visual communication. The ORACLE system provides a data bank of questions from which exams can be compiled, tests scored, item analyses conducted and student files generated. Faculty involvement is high and is reinforced by a fellowship program and the district further supports CAI through its Office of Educational Planning and Development and its campus Directors of Learning Resources. All in all, the computer is an intergral part of the student's instructional program and the learning systems developed in the district serve as models for other colleges. (LB)

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COMPUTERS IN COMMUNICATIONS AND EDUCATION AT COAST COMMUNITY COLLEGE DISTRICT

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INTRODUCTION

Coast Community College District is a publicly supported community college district located in Orange County, California. It is comprised of two colleges: Orange Coast College and Golden West College. In addition, Coast Community College District owns and operates KOCE-TV, Channel 50, Orange County's only color public service educational television station. Currently employing coordinated instructional systems in courses in a number of disciplines, Coast has been a pioneer in the development of auto-tutorial modes of instruction. Auto-tutorial permeates such diverse areas as biology, typewriting, physical sciences, and English.

Coast offers programs in independent study and credit-by-examination to its students, and for the past three years has been developing an extensive cooperative work education program which now enrolls almost 3,000. In the fall of 1972-73, Coast Community College District enrolled 33,669 students.

Coast Community College District has had as much or more experience in using computers in the area of instruction as any other community college in the nation. In 1959, the District purchased an LGP-30, the first computer ever sold to a community college. At that time, the computer, combined with unit record punch card equipment, formed the nucleus of an occupational business data processing curriculum. During the '60's, this program grew to include more than 1,000 students engaged in both business and scientific data processing programs.

Coast has kept abreast of the rather dramatic growth of the computer industry during the past 15 years. As a result, students enrolled in computer-related occupational programs are trained on the latest generation of computer systems. This training allows the students to enter the labor market with knowledge, skills and confidence so necessary for success in today's working environment.

Coast's Computer Hardware From the Beginning to the Present

YEAR	COMPUTER	COMMENT
1959	LGP-30	first computer
1963	IBM 1401 & 1620	
1965	IBM 1401 & 1620	upgraded to disk-oriented system
1966	IBM 1401 & 1620	orientation to IBM S/360
1969	IBM S/360-40	start of CAI
1970	IBM S/360-50	
1972	IBM S/370-155	

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COMPUTER ASSISTED INSTRUCTION

In addition to computer-related occupational programs, computer assisted instruction has emerged at Coast. The District pioneered in the development of computer assisted instruction, and at the present time the CAI hardware consists of an IBM system 370 model 155 computer to which are attached more than 80 typewriter terminals divided between the colleges, 12 CRT's and several random access computer controlled microfiche image projection devices. Coast uses CAI in practically every area of instruction ranging from English grammar, foreign languages, mathematics, and physics to history, humanities, art, and law enforcement.

CAI at Coast has moved beyond the development stage, and over 700 CAI units of instruction are currently employed within the colleges. Students at Orange Coast College, for example, enroll in a slide rule course and learn exclusively from a computer-based instructional system. At Golden West College, police cadets work through computer simulated case situations drawn from actual field experiences. The simulated case situations were developed under a grant from the United States Department of Justice and represent the combined work of Golden West College and the Los Angeles Police Academy.

During the 1971-72 fall school year, approximately 2,000 students at Golden West College were involved with learning materials from 758 instructional segments involving approximately 354 hours of instruction in 40 different subject areas. These 758 segments were developed and used by 85 faculty members. The following list is by subject area, number of segments in each subject area and the average length of duration.

SUBJECT	NUMBER OF SEGMENTS	AVERAGE DURATION	SUBJECT	NUMBER OF SEGMENTS	AVERAGE DURATION
Accounting	11	4:35	Geometry	7	2:00
Algebra	39	21:00	German	3	1:30
Anatomy	32	16:30	Graphic Arts	3	1:30
Arithmetic	46	20:00	Graphing	7	3:10
Art	2	0:15	Library	1	0:30
Biology	30	13:10	Logic	10	15:00
Business Law	14	9:45	Music	1	0:40
Business	1	1:00	Num Analysis	6	1:00
CAI	3	0:40	Photography	1	0:30
Calculus	43	15:35	Physics	52	13:15
Chemistry	33	12:45	Police Science	32	10:00
Computers	22	10:20	Poli. Sci.	17	9:00
Economics	7	8:05	Psychology	3	2:00
Electronics	7	3:35	Secretarial	10	5:10
Engineering	1	0:50	Slide Rule	14	6:30
English	38	20:30	Spanish	193	99:30
Finite Math	10	3:40	Statistics	10	2:50
French	41	14:55	Trigonometry	1	0:20
Geography	2	1:00	Utility	2	0:00
Geology	1	0:30	Zoology	2	1:00

Instructors have extended the use of CAI far beyond the typical subject matters traditionally served. Computers are used to evaluate essays written by students, to help students learn, to sight-sing for electronic trouble-shooting, photography, business law, and world political systems. Records kept during the 1970-71 school year at Golden West College show that students used the computer systems for instructional purposes for a total of 11,624 hours. In 1971-72, this figure had grown to 16,890 hours.

Computer assisted instruction has become an integral part of the total instructional program at both colleges. All students have access to the CAI system and many are required to complete specific assignments.

COMPUTER CONTROLLED DEVICES

Microfiche display devices have been interfaced with the computer to provide visual communication in such areas as art, calculus, anatomy, physiology, and other subjects. Under this CAI microfiche system, students not only interact conversationally with the computer typewriter terminals, but are shown images which are displayed under program control or upon student request. Presently Golden West College is experimenting with a system which combines computer terminals with video tape playback devices, thus providing computer managed television programs. Such a system would probably represent a substantial advance in automated teaching systems.

FACULTY SUPPORT

Recent enrollment in a district-sponsored in-service training program in courseware development resulted in 20% of its faculty being involved. Incentives for this course, which required the development of a couse segment to be used with students, included salary schedule credit and course credit from the University of California.

Professional programmer-consultant support is available to the faculty. In addition, assistance is available in the form of paid laboratory and instructional resources to assist in preparing instructional materials.

Another high impact program has been the District's Faculty Fellowship program. The introduction of the Faculty Fellowship program in the fall of 1969 has had perhaps the greatest effect on the creation of interactive computer instruction segments. In this program, the District makes $70,000 annually available to faculty who may submit proposals for work they would like to be done. Many of these have been in the area of computer assisted instruction. Through this program a new group of instructors has been provided resources to create materials suitable for their particular classes. Both released time and/or extra pay in addition to assistance is made available through the Faculty Fellowship program.

TESTING AND GRADING

A useful tool which has been developed in the area of testing and grading is the ORACLE system. Using this series of programs, the instructor can create a data bank of test questions and for any examination select certain questions and have two forms of the examination created by the computer. The students take the exam using mark-sensed cards which have previously been prepared. The grading programs of the system will present instructors with each student's score, an item-by-item analysis of each question, and store the results in a history file. Up to 18 examinations and 2 seminar scores may be stored in the history file. At the end of the term, grades may be assigned according to the instructor's criteria on the weighted score taken from the history file. Currently 18,000 students are entered on this file. Results of examinations are available for posting the day after the exam is taken regardless of the size of the class.

ORGANIZATION

In 1968, the Coast District established the Office of Educational Planning and Development to assist colleges in meeting the educational goal of providing various instructional alternatives to students through the use of educational technology. In concert with college staff, the Office of Educational Planning and Development consults and works with District faculty members in the development and implementation of computerized learning and evaluative systems by helping faculty members pinpoint their intentions, educational goals, specific behavioral objectives, and judgment criteria. The Office of Educational Planning and Development assists in bringing to the attention of instructors the variety of learning devices that are available within the District.

In addition, each college has a Director of Learning Resources charged with the responsibilities to assist faculty members with the development, implementation, and evaluation of instructional systems ranging from slide modules to complete television programs, including computer-related activities.

The Director of Learning Resources of each college employs a consultant in computer assisted instruction who serves as a resource to faculty members on problems or concepts related to CAI programs. The consultant also conducts courses and seminars on the instructional use of computers for faculty members and District personnel.

SUMMARY

The Coast District is deeply involved in the use of the computer as a tool of instruction. Many instructors on both campuses use the computer as an integral part of their instructional programs, and their learning systems now serve as models which others have followed.

The critical ingredients of Coast's program include strong support by administration, faculty design and use of their own instructional materials, an organization of specialists, numerous in-service training programs and activities, and an enthusiasm by both faculty and students for incorporating educational technology into their teaching and learning experiences.

All modes of coordinated instructional systems approaches, involving a mix of technology, are integral to the communications thrust in which Coast employs the computer as a major component.